

**WHAT IS CLAIMED IS:**

1. A drive power transmission device provided with a drive mechanism for transmitting a drive power between first and second rotary members rotatable relative to each other, by the operation of an electromagnetic type clutch mechanism which brings a friction clutch into connection; wherein said friction clutch has plural friction contact surfaces, and wherein a magnetic path generated around an electromagnet of said electromagnetic type clutch mechanism includes a clutch magnetic path whose magnetic flux passes to reciprocate plural times across said friction clutch.

2. A drive power transmission device as set forth in Claim 1, wherein said friction clutch has at least two friction contact surfaces.

3. A drive power transmission device provided with a drive mechanism for transmitting a drive power between first and second rotary members rotatable relative to each other, by the operation of an electromagnetic type clutch mechanism which brings a friction clutch into connection; wherein a magnetic path generated around an electromagnet of said electromagnetic type clutch mechanism includes a clutch magnetic path whose magnetic flux passes to reciprocate plural times across said friction clutch, and wherein diamond-like carbon surface treatment is given on a part or all of the friction contact surfaces of said friction clutch.

4. A drive power transmission device as set forth in Claim 3, wherein said friction clutch of said electromagnetic type clutch mechanism comprises plates which are brought into friction contact upon receiving the pressuring force which an armature exerts when attracted toward said electromagnet, and wherein said diamond-like carbon surface treatment is given on a part or all of the friction contact surfaces of said plates.

5. A drive power transmission device as set forth in Claim 4, wherein said clutch magnetic path is generated through magnetic path areas of said plates and through magnetic path areas of said armature, said magnetic path areas of said plates being partitioned with partitioning spaces formed in said plates while said magnetic path areas

of said armature is partitioned with partitioning spaces formed in said armature.

6. A drive power transmission device comprising first and second cylindrical rotary members coaxially arranged to be rotatable relative to each other; a main clutch mechanism composed of plural main outer plates rotatable bodily with said first cylindrical rotary member and plural main inner plates rotatable bodily with said second cylindrical rotary member, said main outer plates being arranged in alternate fashion with said main inner plates each for friction contact with said main inner plates adjacent thereto; an electromagnetic type pilot clutch mechanism composed of a pilot outer plate rotatable bodily with said first cylindrical rotary member and a pilot inner plate engageable with said pilot outer plate for rotatable therewith, said electromagnetic type pilot clutch mechanism including an electromagnet unit for bringing said pilot outer and inner plates into friction contact with each other; and a cam mechanism operable upon receiving the rotational torque of said pilot inner plate for bringing said main outer and inner plates into friction contact, wherein said electromagnet unit and said pilot outer and inner plates include means for generating a clutch magnetic path whose magnetic flux passes to reciprocate plural times across said pilot outer and inner plates of said electromagnetic type pilot clutch mechanism.

7. A drive power transmission device as set forth in Claim 6, wherein a part or all of friction contact surfaces of said pilot outer and inner plates are given diamond-like carbon surface treatment or soft-nitriding surface treatment.

8. A drive power transmission device as set forth in Claim 7, wherein said means for passing said magnetic flux to reciprocate plural times across said pilot outer and inner plates comprises:

a magnetic flux isolation member made of a non-magnetic material and formed with outer and inner cylindrical portions arranged coaxially with each other; and

arc slits formed in said pilot outer and inner plates on at least triple circles whose outermost and innermost circles respectively correspond in diameter to said outer and inner cylindrical portions of said magnetic flux isolation member ;

said magnetic flux isolation member being arranged in axial alignment with said pilot outer and inner plates with said outer and inner cylindrical portions respectively facing said arc slits on said outermost circle and said arc slits on said innermost circle of said pilot outer and inner plates.

9. A drive power transmission device as set forth in Claim 8, wherein said electromagnet unit includes an electromagnet for attracting said pilot outer and inner plates thereto and an armature arranged at a side opposite to said electromagnet for pressuring said pilot outer and inner plates on said electromagnet when attracted by the same, and wherein said means for passing said magnetic flux to reciprocate plural times across said pilot outer and inner plates further comprises:

arc slits formed in said armature on a circle which corresponds in diameter to an intermediate circle between said outermost circle and said innermost circle and facing said arc slits formed in said pilot outer and inner plates on said intermediate circle.

10. A drive power transmission device comprising first and second cylindrical rotary members coaxially arranged to be rotatable relative to each other; a main clutch mechanism composed of plural main outer plates rotatable bodily with said first cylindrical rotary member and plural main inner plates rotatable bodily with said second cylindrical rotary member, said main outer plates being arranged in alternate fashion with said main inner plates each for friction contact with said main inner plates adjacent thereto; an electromagnetic type pilot clutch mechanism composed of a pilot inner plate, an electromagnet for attracting said pilot inner plate thereto, and an armature rotatable bodily with said first cylindrical rotary member and movable axially relative thereto for pressuring said pilot inner plate on said electromagnet when attracted by the same; and a cam mechanism operable upon receiving the rotational torque of said pilot inner plate for bringing said main outer and inner plates into friction contact, wherein said electromagnetic type pilot clutch mechanism further includes means for generating a clutch magnetic path whose magnetic flux passes to reciprocate plural times across said pilot inner plate of said electromagnetic type pilot clutch mechanism.

11. A drive power transmission device as set forth in Claim 10, wherein said means for generating said clutch magnetic path comprises:

a magnetic flux isolation member made of a non-magnetic material and formed with outer and inner cylindrical portions arranged coaxially with each other;

arc slits formed in said pilot inner plate on at least triple circles whose outermost and innermost circles respectively correspond in diameter to said outer and inner cylindrical portions of said magnetic flux isolation member; and

arc slits formed in said armature on a circle which corresponds in diameter to an intermediate circle between said outermost circle and said innermost circle and facing said arc slits formed in said pilot inner plate on said intermediate circle.